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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/437,607	11/10/1999	RUFUS L. CHANEY	1797.0090005	8216

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EXAMINER

IBRAHIM, MEDINA AHMED

ART UNIT	PAPER NUMBER
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1638

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/437,607

Applicant(s)

CHANEY ET AL

Examiner

Medina A Ibrahim

Art Unit

1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 8-18, 38-40, 48, 49 and 54-60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-18, 38-40, and 48-49, and 54-60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1638

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Applicant's response filed 10/15/04 in reply to the Office action mailed 03/29/04 has been entered. Claims 1, 10, 38, 49, and 55-56 have been amended. Claims 50-53 have been cancelled. New claims 57-60 have been added. Therefore, Claims 1-4, 8-18, 38-40, and 48-49, and 54-60 are pending and are under examination.

New Matter

Claims 1-4, 8-18, and 38-40, 48, 54 and 60 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a NEW MATTER rejection.

Claims 1, 10, 54-55, 57 and 60 recite adjusting the soil pH from a first pH to a second pH "of 5.6 to 9.5". However, support for this range of soil pH cannot be found in the specification or in the claims as originally filed. Page 8 of the specification provides pH ranges of 5.5-7.0. Table 1 on pages 21-22, the soil pH varies from 4.84 to 6.54. Tables 2 and 2 as originally filed do not provide support for this range of pH. Therefore, the limitation of soil pH from 5.6 to 9.5 is considered to be a new matter. Applicant is requested to point to support for the limitation in the originally filed disclosure or to delete the New Matter in response to this Office action.

Claim Rejections - 35 USC § 112

Claims 4 and claims 38-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 is indefinite because what is encompassed by "limestone equivalents" is unclear, and the specification fails to define the phrase. Clarification is required to more clearly define the metes and bounds of the claims.

Claims 38-40 are indefinite in the recitation of "a factor" of 2, 3, or 4, respectively. It is unclear what the measurement is based on and whether the concentration of the metal accumulated in the plant is intended to be the factor times the concentration of the metal in the soil or something else. The specification fails to define the term, and therefore the metes and bounds of the claims are unknown. Clarification is required to more clearly define the metes and bounds of the claims.

Claim Rejections - 35 USC § 112

Claims 1-4, 8-9, 38-40, and 48-49, and 54-60 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of selectively increasing the amount of Ni recovered from metal containing soil by adjusting the pH of the soil from an initial pH to a raised pH of at least 5.6, soil calcium concentration of between 0.128 mM and 5.0 mM, and Ca:Mg exchangeable ratio of between 0.16 and 0.40; and cultivating in the soil the hyperaccumulators of Alyssum,

Art Unit: 1638

does not reasonably provide enablement for the use of any nickel-hyperaccumulator, cobalt-hyperaccumulator, and manganese-hyperaccumulator that accumulates amount of heavy metals from the soil as recited in the claims. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims.

This rejection is repeated for the reasons of record as set forth in the Office action of 03/29/04. Applicant's amendments to the claims do not obviate the rejection.

Art Unit: 1638

The claims are drawn to a method of hyperaccumulating nickel, cobalt, and manganese by adjusting the soil pH to an increased pH of at least 5.6. However, according to Tables 1-3 of the specification, adjusting the soil from low to an increased soil pH of at least 5.6 actually decreases the accumulation of cobalt and manganese in by the plant. For example, In Example 1 and Table 1, adjusting (lowering) the soil pH (soils 1-19) consistently increased Co and Mn, but decreased Ni accumulation. Example 3 and Table 3 also show similar results. Therefore, adjusting the soil pH from an initial pH to an increased pH of at least 5.6 appears to work only for Ni hyperaccumulation. In addition, the non-elected invention of claims 5-7, 19-37 and 41-47 are directed to a method where the initial pH is lowered for the hyperaccumulation of cobalt. Therefore, claims drawn to a method for increasing accumulation of Co and Mn by adjusting soil pH from an initial pH to an increased pH of at least 5.6 are not supported by an enabling disclosure for the reasons discussed in the Office action of 03/29/03. The instant specification is not enabling hyperaccumulation of metals under the conditions as recited in the claims because on page 18 of the specification indicates that the hyperaccumulation of Ni by Alyssum does not only depend upon the soil pH, but also other factors such as the soil calcium concentrations of between 0.128mM and 5.0 mM and Ca:Mg exchangeable ratio of between 0.16 and 0.40. The instant claims do recite other than pH factor (and calcium concentration in claim 11). Therefore, the soil pH conditions as recited in the claims may not be sufficient for the hyperaccumulation of even nickel because other soil factors of calcium concentration and Ca:Mg

Art Unit: 1638

exchangeable ratio are not recited in the claims. Therefore, the rejection is made and maintained.

Remarks

Claims are deemed free of the prior art in view of the declarations under Rule 1.132 of Yin-MING of 02/13/03 and 12/08/03.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Baker et al. (New Phyt. (1994), vol. 127, pp. 61-68. Baker et al teach accumulation of Mn in *Thlaspi caerulescens* from a culture solution containing Mn, wherein Mn concentration of 10,000 mg/kg of dry wt has been accumulated in plant tissues. Baker et al do not teach growing the plants in Mn containing soils.

No claim is allowed.

Contact information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Medina A. Ibrahim whose telephone number is (571) 272-0797. The Examiner can normally be reached Monday -Thursday from 8:00AM to 5:30PM and every other Friday from 9:00AM to 5:00 PM. Before and after final responses should be directed to fax nos. (703) 872-9306 and (703) 872-9307, respectively.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Dr. Amy Nelson, can be reached at (571) 272-0804.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/437,607

Page 7

Art Unit: 1638

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

12/27/04

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MEDINA A. IBRAHIM
PATENT EXAMINER

Medina A. Ibrahim